

Space News ROUNDUP!

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President's NASA budget \$13.4 billion

International Space Station gets mention in State of Union address

President Bill Clinton is proposing a \$13.46 billion budget for NASA in fiscal year 1999, a slight decrease from fiscal 1998's \$13.64 billion mark.

The President also closed his State of the Union address with remarks about America's space program, and included STS-88 Commander Bob Cabana in his list of guests for the Capitol speech.

"Even as we explore this inner space in the new millennium, we're going to open new frontiers in outer space," Clinton said. "Throughout all history, humankind had only one

place to call home—our planet Earth. Beginning this year, 1998, men and women from 16 countries will build a foothold in the heavens. The International Space Station, with its vast expanses, scientists and engineers will actually set sail on an uncharted sea of limitless mystery and unlimited potential."

The 1999 budget request to Congress includes \$5.5 billion for human space flight, down from \$5.67 billion in 1998; \$5.46 billion for science, aeronautics and technology, down from \$5.55 billion in 1998; \$2.47 billion for mission sup-

port, up slightly from \$2.38 billion in 1998; and \$20 million for the Office of the Inspector General.

"I know that a budget is about priorities and the promise of the future. But I also believe—deeply—that a budget isn't only about priorities and promise. It is also about performance," NASA Administrator Daniel S. Goldin said.

"The Administration has clearly articulated its goals for the civil aeronautics and space programs," he continued. "The NASA Strategic Plan lays out our programs to achieve these goals. And the bud-

get proposal which I present to you today provides the resources required to do that. When I was confirmed, I said that a vision must be matched by a schedule and a budget. That is what we have. That is the context for this budget."

Goldin said the budget will enable NASA to keep up the important work of opening the air and space frontiers and enriching the lives of all Americans, and thanked President Clinton for recognizing NASA's promise, making the agency a priority and committing the

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S89-E-5315

THUMBS UP?—Even though up and down have little meaning for Astronaut Andy Thomas now, his predecessor aboard the Russian Mir Space Station gives a thumbs up in the docking hatch as the pair exchange notes on Jan. 26. Dave Wolf returned to Earth aboard *Endeavour*, leaving Thomas to wrap up American Phase 1 Program research aboard the orbiting outpost. More pictures are on Page 4.

STS-89 mission 'incredible,' crew tells welcoming crowd

By Leslie Eaton

Commander Terry Wilcutt described Dave Wolf and Andy Thomas as bold and daring adventurers who are paving the way for a permanent presence on the International Space Station as the STS-89 crew returned home from its docking mission.

"First of all we had an incredible mission," Wilcutt told a crowd of well-wishers who greeted the crew upon their return to Ellington Field on Feb. 1. "It was fun from start to finish. And I think we got everything done. We had the finest team atmosphere that you could possibly hope for on a shuttle team."

The STS-89 crew docked with Russia's Mir Space Station, bringing more than 8,000 pounds of supplies and hardware. The *Endeavour* crew brought home Dave Wolf and left

behind Andy Thomas, who is starting his four-month research mission as the final American to live and work on the 12-year old station.

Wilcutt commended Wolf and Thomas. "They're bold, and they're daring adventurers, and I tell you, you may or may not know that it's an all volunteer force and they are out there paving the way for our permanent presence on the International Space Station."

Pilot Joe Edwards praised the teams on the ground that worked to make the mission a success.

"We get a lot of the press and a lot of the credit for the good things that happen," Edwards said. "But the truth is that it's all of you good folks out there that are really making it happen behind the scenes and it's

Please see **ENDEAVOUR**, Page 2



Space station agreements set stage for future

Senior government officials from 15 countries met in Washington on Jan. 29 to sign agreements establishing the framework for cooperation among the partners on the design, development, operation and utilization of the International Space Station.

Acting Secretary of State Strobe Talbott signed the 1998 Intergovernmental Agreement on Space Station Cooperation, along with representatives of Russia, Japan, Canada and participating countries of the European Space Agency (Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom).

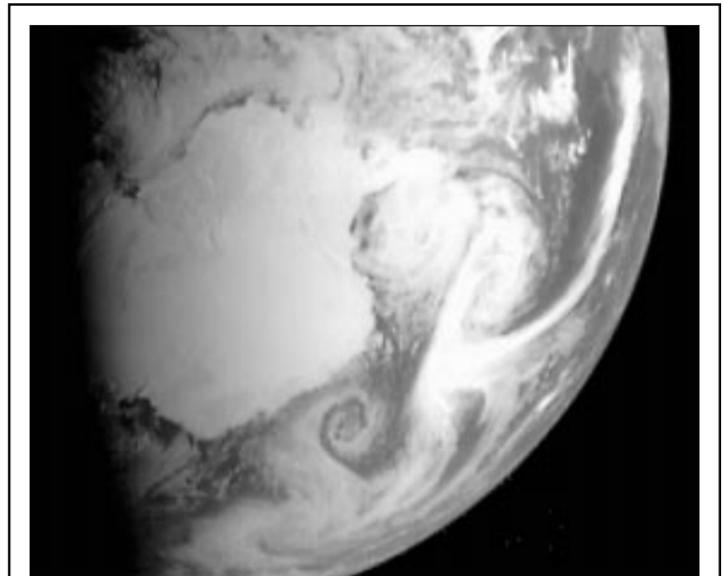
Three bilateral memoranda of understanding also were signed by NASA Administrator Daniel S. Goldin separately with his counterparts: Russian Space Agency General Director Yuri Koptev, ESA Director General Antonio Rodota and Canadian Space Agency President William (Mac) Evans. The memorandum of understanding between NASA and the government of Japan will be signed at a later date.

The new agreements supersede previous space station agreements among the U.S., Europe, Japan and Canada signed in 1988. These new agreements reflect changes to the space station program resulting from significant Russian participation in the program and program design changes undertaken by the original partnership in 1993.

"Today we celebrate a key milestone in humanity's journey into the future. The journey is made possible not through the efforts of any single space agency, not through any single nation, but through the strength and common purpose of the partnership that we celebrate today," said Dr. Jack Gibbons, the President's science adviser.

"The station represents one of the most challenging technological and managerial tasks ever undertaken by mankind. Each of the partners represented here today has a specific and an important role to play," Gibbons added. "Canada, through the Canadian Space Agency, will provide critical robotic capabilities for assembly and operation of the station. The participating nations of

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NASA Photo

SWING-BY SNAPSHOT—NASA's Near Earth Asteroid Rendezvous spacecraft snapped this close-up of the home planet using a multispectral imager on Jan. 23, after the spacecraft swung by Earth on its way to the asteroid Eros. The south pole is at the center, with Antarctica surrounded by sea ice and storm fronts.

Thomas settles in on Mir, welcomes Mir 25 crew mates

The seventh and final mission of an American astronaut to the Space Station Mir is well under way, as Astronaut Andy Thomas nears the end of his third week as a crew member, furthering a cooperative program designed to develop the knowledge and expertise needed to begin assembly of an International Space Station later this year.

Thomas officially became a member of the Mir 24 crew on Jan. 25. Since then, Thomas has been performing a variety of scientific experiments as he settles into his four-month stay on orbit.

Meanwhile, Commander Anatoly Solovyev and Flight Engineer Pavel Vinogradov have been busy handing over the reins of control of

Mir operations to Mir 25 Commander Talgat Musabayev and Flight Engineer Nikolai Budarin, who arrived on the station on Jan. 31 along with French researcher Leopold Eyharts, who is representing the French space agency CNES.

On Feb. 19, Solovyev and Vinogradov will board their Soyuz TM-26 craft with Eyharts, undock from Mir and return to Earth to complete 198 days in space. The next day, Musabayev, Budarin and Thomas will climb into the Soyuz TM-27 craft which is docked to the Kvant-1 port, undock from Mir and fly around the station for a redocking at



the transfer node port. That will free up the Kvant-1 port for the redocking of an unmanned Progress resupply vehicle on Feb. parking orbit since late last week.

Later this month, the oldest part of Mir, the Core Module, will pass 12 years on orbit.

In systems activities, the cosmonauts replaced the electronics unit on one of Mir's eleven operational gyroscopes. Spare parts for the gyroscope were brought up on *Endeavour*. Before repairing the gyroscope, the station had been operating normally on 10 gyroscopes, but having the additional gyroscope available will

reduce propellant consumption.

Thomas' research is focusing on 27 studies in the areas of Advanced Technology, Earth Sciences, Human Life Sciences, Microgravity Research, and International Space Station Risk Mitigation. The investigations are a combination of experiments performed on previous Mir missions as well as new research. One of the first experiments to be activated was an X-ray detector device. This investigation will gather information on the background cosmic radiation aboard the station.

Thomas, the seventh and final NASA astronaut to live and work aboard Mir, is scheduled to return to Earth in early June aboard the shuttle *Discovery* during STS-91.

Commander, pilot round out station assembly crew

Astronaut Brian Duffy will command STS-92, the third U.S. assembly flight to the International Space Station.

Duffy, an Air Force colonel, will be joined on the flight deck by Pilot Pamela Melroy. Melroy, an Air Force major and member of the 1994 Astronaut Class, marks her first space flight with STS-92. The flight will be Duffy's fourth space mission.

Mission Specialists Koichi Wakata of NASDA, Jeff Wisoff, Ph.D.; Leroy Chiao, Ph.D.; Bill McArthur, Army colonel; and Michael Lopez-Alegria, Navy commander, were assigned in June.

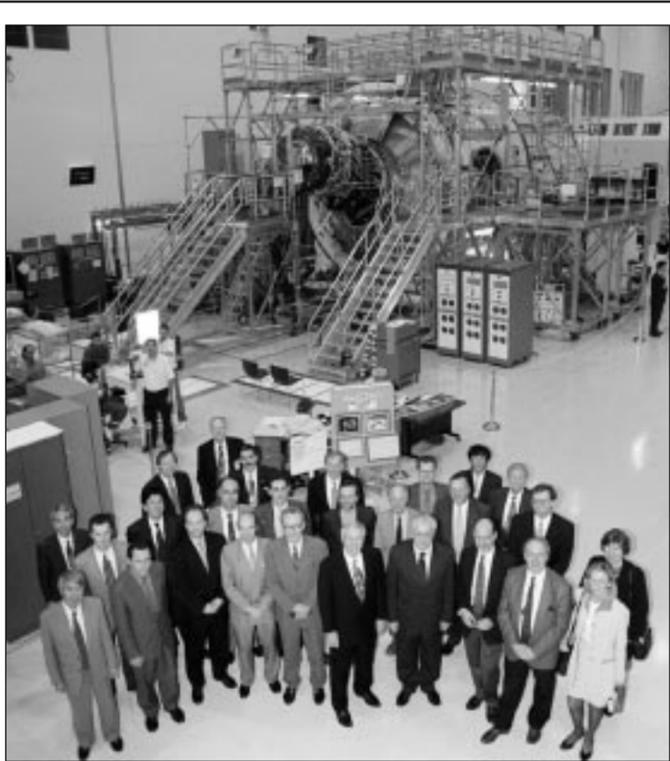
Working in teams of two, Chiao, Wisoff, McArthur and Lopez-Alegria will conduct four space walks over the course of the mission, while Wakata has primary responsibility for operating the shuttle's Remote Manipulator System robot arm.

This fifth assembly flight will build on previous American and Russian assembly flights. STS-92 will be the third shuttle mission to the station.

"I couldn't be more pleased with the selection of Col. Duffy and the crew for STS-92. I have complete confidence in him and his fellow crew members, and look forward to working with them," said Randy Brinkley, station program manager.



Duffy



KSC Photo 98PC246

SIGNING OF THE TIMES—Senior government officials from 15 countries participating in the International Space Station visit the American-built Node 1 at Kennedy Space Center's Space Station Processing Facility following a signing ceremony in Washington D.C. Partners from Russia, Japan, Canada, and European Space Agency, including Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom signed the framework of cooperation. Front to back, left to right: Hidetoshi Murayama, Louis Laurent, Haakon Blankenborg, Joris Vos, Tom Vraalsen, NASA Administrator Daniel Goldin, Luigi Berlinguer, Antonio Rodota, Yvan Ylief, Jacqueline Ylief, Masaaki Komatsu, Serge Ivanets, Hiroshi Fujita, Akira Mizutani, Peter Grogard, Michelangelo Pipan, Gerhard Fulda, Jorg Feustel-Buechl, A. Yakovenko, JoAnn Morgan, Steve Francois, Roy Tharpe, Jon Cowart, John Schumacher, Didier Kechemair, Yoshinori Yoshimura and Loren Shriver.

Boeing to help place workers

Managers agree cuts won't hurt shuttle safety

NASA's space shuttle managers have reviewed the process that space flight operations contractor United Space Alliance will use to lower operating costs and have determined that safety will not be compromised.

NASA's Safety and Mission Assurance Risk Assessment team concurs with the process USA used to determine reductions in their workforce. NASA asked USA to ensure that the flight rate for 1999 and beyond can be safely supported after the efficiencies are carried out.

Both NASA and USA understood that work force reductions would be part of the space flight operations contract to reduce costs. The space flight operations contract was awarded to USA at the beginning of 1996.

In an effort to assist employees affected by layoffs at USA, The Boeing Company reports that it has reviewed hiring plans at its space businesses. Based on new business and the level of normal employee attrition due to retirements, the company foresees 150-400 job openings in the Houston and Florida areas.

"With the new combination of Boeing and the former McDonnell Douglas and Rockwell businesses, Boeing currently has over 5,000 employees in the Florida and Houston areas," said John McLuckey, president of Boeing's Space Systems business unit.

"These businesses support major programs such as Delta launch vehicles, the space shuttle and the

International Space Station."

"Current forecasts show approximately 150 job openings on the Delta launch vehicle program," McLuckey added. This includes 100 openings in Florida (launch operations support and engineering), and 50 engineering openings in Houston.

In addition, past experience has shown that Boeing expects an annual turnover of 5 percent of the workforce due to normal attrition such as people leaving the company for retirement or taking new jobs with other companies. This translates into about 250 openings during the year in Houston and Florida.

"Over the past several months we have also increased our presence in Florida by adding over 200 employees for space station hardware testing and processing for launch," McLuckey added. "With planned space station launches scheduled over the next five years we expect our Florida operations employment to remain relatively stable."

While there are always uncertainties over what kinds of job openings become available due to attrition, and the timing of those openings, Boeing said it will try to match these openings to the affected USA workers, and will work closely with USA in its outplacement efforts.

To help accelerate the process, Boeing has set up a special electronic database to be able to accept applications and resumes over the Internet at: <http://www.resjobs.com/boeing>



S78-27136

Explorer 1 launches from the missile test center at Cape Canaveral, Fla., on Jan. 31, 1958.

NASA celebrates 40th anniversary of Explorer 1

Forty years ago Jan. 31, a team of scientists and engineers successfully launched Explorer 1, the first U.S. satellite to orbit the Earth. This historic accomplishment marked the nation's debut in the Cold War-era space race and set the stage for the establishment of the civilian space agency that would become NASA.

NASA's Jet Propulsion Laboratory was still operated as a research laboratory for the U.S. Army when it was selected in November 1957 to develop the first U.S. satellite, including its science package, communications system, and the high-speed upper stages for the Army's Redstone rocket that would guide

Explorer 1 into the great unknown.

JPL and the Army completed the assignment and launched the satellite in less than three months. JPL and the Army Ballistic Missile Agency in Huntsville, Ala., joined in firing the 20-pound satellite from the missile test center at Cape Canaveral, Fla., on Jan. 31, 1958.

The scientific experiment onboard, a cosmic ray detector built by Dr. James Van Allen, University of Iowa, soon returned one of the most important findings of the space program: the discovery of what are now known as the Van Allen Radiation Belts around the Earth. Explorer 1 went on to operate for three months.

Following the Soviet Union's launch of Sputnik on Oct. 4, 1957, "there was a lot of pressure to get a satellite in orbit as quickly as possible," said Dr. William Pickering, then JPL's director.

The intensive effort was accomplished by a team of experts from U.S. academia and the military, along with top World War II German rocket scientists such as Dr. Wernher von Braun, who emigrated to the United States in the post-war years to help lead development of American rocket capabilities. A globally linked telecommunications system developed by JPL tracked Explorer 1 and received its scientific

data. Amateur radio operators all over the world were invited to listen in on Explorer 1's communications.

Van Allen, still an active planetary and space physics researcher, observed that "there is no shortage of great ideas on what we'd like to do. 'Faster, better, cheaper' is NASA's mantra, and the recent successful launch of the Lunar Prospector spacecraft is the best example of that. But the Hubble Space Telescope is a good example of big projects that will continue to be conducted," he said. "There is virtually no limit to what can be investigated in interplanetary science and astronomy."

Endeavour crew praises ground support

Continued from Page 1

kind of unfortunate that you do not get more of the public credit. So this is the one opportunity that we have as a crew, STS-89, the crew of *Endeavour* to thank you for all the things that you have done to enable us to accomplish the mission that we went up there to do."

Payload Commander Bonnie Dunbar echoed that praise. "I'd like to thank all of the people who build the hardware that we put on these shuttles, who work with us, who train with us, who help execute the mission, and I encourage them to keep coming back because we intend to keep using this vehicle as a platform to test, to evaluate, to help assemble a space station and to evolve into the next generation of vehicle and put

science and research technology permanently into low earth orbit."

Mission Specialist Mike Anderson gave special thanks to the workers in Palmdale, Calif., who overhauled *Endeavour* and installed the external airlock. "You know when you have a space shuttle that performs as well as ours did it's really easy. It really makes you look good."

With the monumental task of coordinating the transfer of almost 1,400 different items between Mir and *Endeavour*, Mission Specialist Jim Reilly said he enjoyed the mission.

"It was a wonderful coordination between the crews. The Russian and U.S. crews were absolutely outstanding as far as being able to work together," Reilly said.

The Russian crew member of

STS-89, Salizhan Sharipov described the mission as "fantastic."

"I can't find any other words because no words to explain my feeling that I felt there. Of course, if I was going to Mars, I would want to go to the Mars with this crew, I think. I just fell in love with this group."

After four months on the Mir space station, Dave Wolf struggled for words to explain his experience.

"I also don't have the fitting words. It's so amazing. I see a lot of the colleagues and friends out here the best in the world. And I guess if this job were easy, we'd be out looking for new jobs. And this is not an easy job we're doing. And we've all worked real hard and it brings the team together, I guess that's what makes it so memorable."



JSC Photo S98-01431 by Steve Candler

Astronaut Dave Wolf is accompanied by JSC Director George Abbey from the runway to NASA Hangar 990 at Ellington Field for the traditional crew return ceremonies. Wolf had just returned from a 128-day stay in space, most of it aboard the Russian Mir Space Station, the day before.

Community News

Carbon monoxide danger insidious

(Editor's note: This article surfaced during last fall's Safety and Total Health Day observance, and while the author requested anonymity, agreed to share this frightening experience.)

One unusually cold morning two winters ago, the carbon monoxide detector in our 10-year-old house started beeping. I was leaving for work, kids already in the car. I'd read that these detectors have a tendency to give off false alarms, so assumed it must be false because no one had any symptoms, or so we thought. Irritated and hurried, I removed the battery from the detector and went to work. As I'd stood on the chair to remove it from the wall in the hallway between bedrooms, I'd gotten a fleeting, dizzy feeling. That created just enough suspicion in me to arrange for a heating contractor to take a look at our gas heater that afternoon.

The contractor detected CO coming from our heater but couldn't quantify it well with his device. Because he suspected the heat exchanger of having a few rust holes, I arranged to replace it the next day. Still, we did not notice any symptoms such as headache, nausea, dizziness, or cherry-red nails, so we decided to stay home another night.

Neither the local volunteer department nor the local Houston Fire station had a device to measure CO levels, something we learned only after we had four fire trucks and a dozen firefighters race to our home with sirens blaring, creating quite a stir. The firefighters suggested we call out the "Big Box" [hazardous materials truck], because *surely* they'd have a gauge. Instead, we tried the gas company and got our only chuckle of the night when a lone technician in a mini-pickup arrived with the necessary gauge amidst our ensemble of willing-but-gaugeless heroes.

The gas technician quantified the level of CO, which was enough to find somewhere else to spend the night. The firefighters set about airing out the house. That night, colder than the previous one, was the coldest of the year. The next day, our heat exchanger, which had more holes than metal, was replaced. Had we stayed, the heater would have run all night, and our children sleeping upstairs would have been in danger.

Much later, we found that a series of serious illnesses were linked to CO poisoning. Like many doctors, we

thought of CO poisoning as a single, extraordinary, overcoming event. We learned that CO poisoning can occur slowly over a long period of time. It binds to blood components and does not let go easily. Even fresh air does not replace CO in the bloodstream with oxygen, as CO has about 250 times more attraction to hemoglobin than does oxygen. CO poisoning mimics some illnesses and weakens the immune system.

CO does not accumulate evenly in all areas of a house. It collects, starting at the ceiling, because it is slightly lighter than air. We learned this because the only person seriously affected was our 5-year-old son who slept in a top bunk in a second floor, corner room.

My son's headaches started in October, about the same time our heater was started that season. Then came recurrent bouts of pneumonia, strep throat, flu, bronchitis, etc., illnesses too numerous to remember. By the time our CO detector went off four months later, he had fallen victim to depression caused by imbalances in his brain chemistry. This took another seven months to diagnose and more than a year to treat. For those seven months, the telltale headaches, combined with fatigue, had a debilitating effect. When asked by firefighters that night if any of us had any symptoms of CO poisoning, we hadn't considered our son's headache. He'd had it for months, but we thought of CO poisoning as a sudden event.

Here are some lessons learned:

- Don't ignore your detector or your suspicions, even if you don't notice symptoms.
- Have more than one CO detector, and place them near ceilings and in bedrooms, especially those with bunk beds.
- Many detectors, designed to minimize false alarms, can accumulate low levels of CO for a long time before beeping. Your health may be your first clue if the detector isn't well placed.
- More CO will accumulate in rooms than in the attic where the faulty heater is located. Don't put your only detector here.
- To get a quantifiable CO reading, call the gas company or check with your local volunteer fire department.
- Have your heater inspected yearly. Humidity can rust out a new one in less than 10 years.



Photo by Paul Maley

The total solar eclipse of July 11, 1991, was photographed by JSC eclipse viewing expert Paul Maley on a visit to Santiago Ixcuintla, Mexico. Houston will see a partial eclipse of 21.5 percent beginning at 10:39 a.m. Feb. 26.

Expert warns to use caution when viewing coming eclipse

Houstonians will be treated to a partial solar eclipse Feb. 26, a rare event that will not be seen again here until Dec. 14, 2001. But a JSC expert on eclipse viewing warns that not all viewing methods people try to use are safe.

Paul Maley, a manager in United Space Alliance's cargo mission support group, has seen 19 solar eclipses and is considered by many to be the local expert on safe eclipse viewing methods. He saw his first partial eclipse at age 14, but nearly injured himself because he had no expert help.

"I had to figure out how to safely observe the eclipse by myself," Maley said. "I had a small telescope that came with a green solar filter for the eyepiece. I walked away from the telescope for a minute and when I returned I noticed bright sunlight streaming through the crack in the eyepiece. From that point on, I was scared to look at the Sun with a telescope with any filter."

Maley, will be among thousands who will travel to the Lesser Antilles for a total eclipse Feb. 26. He said eclipses are spectacular events, and may be viewed safely by following a few precautions.

However, he warned, many

people still follow inaccurate information they received, often as children, regarding how to watch the eclipse safely. This is especially true concerning protective filters for directly viewing the sun.

The danger to vision is significant because there are no pain receptors in the retina. The lens in the eye acts like a magnifying glass causing burns on the retina without any feeling of pain.

"The safest and most inexpensive method to view the eclipse is by projection," Maley said.

A pinhole or small opening is used to cast the image of the Sun onto a white card placed 18 inches or more beyond the opening.

One of the most widely available filters for directly observing the Sun is a number 14 welder's glass, available through welding supply companies for about \$3.

Unsafe methods of viewing eclipses include layers of color or black and white film, medical x-ray films, smoked glass, photographic neutral density filters and polarizing filters. Solar filters that are designed to thread into eyepieces and are often sold with inexpensive telescopes, also are dangerous. They should not be used for viewing the Sun at any time since they often crack from overheating.

Final tally shows JSC generous

The JSC 1997-98 CFC has closed with record contributions to the Texas Gulf Coast CFC by JSC, and other Government employees, as well as JSC retirees. Contributions totaled \$504,085.86 which represents a 5 percent increase over last year.

The final report shows the total given by each organization, its percent of participation, its amount donated, and the percent of goal:

Office of the Director, 100 percent, \$3,427.04, 202 percent; Human Resources Office, 100 percent, \$12,917.28, 248 percent; Office of the Chief Information Officer, 100 percent, \$3,565, 149 percent; Equal Opportunity Programs Office, 100 percent, \$2,441.82, 222 percent; Legal Office, 100 percent, \$2,827, 166 percent; Office of Public Affairs, 91 percent, \$8,253, 183 percent; ISO 9000 Office, 50 percent, \$296, 37 percent; Business Management Directorate, 66 percent, \$41,172; 105 percent; Flight Crew Operations Directorate, 63 percent \$31,371, 81 percent; Mission Operations Directorate, 69 percent, \$78,906, 114 percent; Engineering Directorate, 63 percent, \$131,472, 99 percent; Information Systems Directorate, 54 percent, \$13,744, 97 percent; Technology Transfer and Commercialization Office, 100 percent; \$3,775, 145 percent; Center Operations Directorate, 74 percent, \$12,755, 72 percent; Office of the Chief Financial Officer, 71 percent, \$10,572, 124 percent; Space Shuttle Program 87 percent, \$35,537, 140 percent; Safety, Reliability, and Quality Assurance Office, 85 percent, \$22,394, 109 percent; Space Station Program Office, 58 percent, \$39,444, 94 percent; Space and Life Sciences Directorate, 75 percent, \$33,662, 80 percent; Space Operations Management Office, 100 percent, \$4,202, 102 percent; EVA Project Office, 81 percent, \$4,514, 146 percent; Phase 1 Program, 80 percent, \$3,298, 143 percent; NASA Office of Inspector General, 43 percent, \$1,644, 51 percent. In addition, the Space and Missile Systems Center, contributed \$965; JSC Retirees and JSC retirees contributed \$925.

The grand total was 69 percent participation, \$504,085, 104 percent of the goal.

JSC Safety Alert

Riding Bicycles at JSC

What Happened

"A bicycle was coming up from behind me. As I turned to go into Building 10, the rider passed me, barely missing me. I could have been hurt badly." — Close Call Report 97-863. "In the twilight just after sunset, a bicycle rider crossed just in front of me in the crosswalk near Building 46 on Second Street. I narrowly missed this rider." — Close Call being submitted.

What You Must Do

If you ride a private or government bicycle on site, you must:

Follow paragraph 11, Table 7 of the JSC Vehicle Code. Follow Chapter 203 of the JSC Safety Requirements Handbook. Stop for pedestrians in or immediately at crosswalks. Do not pass a vehicle that is stopped at a crosswalk. Follow all traffic rules and laws for bicycle riders. Avoid riding on sidewalks if possible. Yield to pedestrians at all times. Warn pedestrians before you pass them.

What You Can Do

If you ride a private or government bicycle on site, you should:

Use common sense when passing pedestrians. Be courteous. Equip your bicycle with a horn or bell to warn pedestrians. When approaching pedestrians from either direction, slow down. Make sure it's safe to pass a pedestrian when passing from the rear. Be prepared to take evasive action if a pedestrian suddenly moves into your path of travel. There are many instances where bicycle riders have been observed doing good things such as following the rules, adding a horn, adding an orange flag to help them be seen, and wearing a helmet.

This notice is designed to help all JSC bicycle riders to do the right thing. For additional information, contact John Stanford/NA3 at x31347.

Local aerospace companies share technology with students

A team of local aerospace companies have joined together to provide space education materials to all students in the Clear Creek Independent School District.

Beginning in November, all secondary schools in the district began receiving subscriptions to NASA Technology Today magazine through a grant from Lockheed Martin, AlliedSignal, Technical Services Corporation, Computer Science Corp., Booz-Allen & Hamilton, and GTE.

The magazine, which focuses on what technology-based innovation achieves through NASA endeavors, provides teaching guides and lesson plans for educators, as well as special articles and projects for students.

JSC Child Care Center has openings

The JSC Child Care Center now has a few openings in the pre-school program for children ages 3-5.

The children are learning with the accredited A Beka curriculum and through open play centers. Three year olds are introduced to

Joe Pramberger, publisher of NASA Technology Today, said, "As demonstrated by the recent Mars mission, NASA has for more than three decades sparked student's interest and excitement about science. That is what NASA Technology Today is all about—to share these exciting innovations with educators for their use in the classroom."

Clear Creek Independent School District is certainly appreciative to the organizations providing the subscriptions of NASA Technology 'Today for our students,' said District Superintendent John Wilson. "This effort is another example of the partnership between NASA/Johnson Space Center, the school district, and the local community."

the sounds of the alphabet and 4-year-olds put the alphabet together as they begin to read.

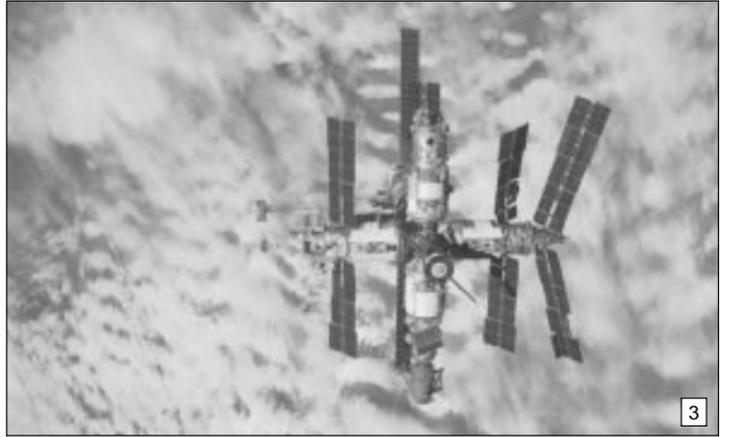
Civil service and contractors, on or off-site, should call Kristy or Shelly at x34734 for a tour or information.



S89-E-5304



S89-E-5320



S89-E-5457

Signed, sealed, delivered to Mir

The STS-89 astronauts of *Endeavour* successfully swapped Phase 1 Program crew members and delivered a full load of supplies and equipment to the Russian Mir Space Station last month.

In addition, they downlinked a large number of Electronic Still Camera photos that illustrated the mission's accomplishments photographically while it was still in progress:

1) The crews of *Endeavour* and Mir gather in the space station's Core Module for the traditional in-flight portrait. From left, are Dave Wolf, Pavel Vinogradov, Terry Wilcutt, Salizhan Sharipov, Anatoly Solovyev, Jim Reilly, Bonnie Dunbar, Andy Thomas, Joe Edwards and Michael Anderson.

2) Thomas, left, and Wolf go over some of the experiment equipment aboard Mir during hand-over operations.

3) A blanket of white clouds provides a backdrop for the Russian Mir Space Station.

4) Dunbar works with Risk Mitigation Experiment-1326 at the Volatile Removal Assembly.

5) The new Mir-24 crew, from left, Vinogradov, Solovyev and Thomas, gathers aboard Mir.

6) With checklist in hand on the middeck, Anderson begins the transfer of supplies and equipment from *Endeavour* to Mir.

7) Thomas don's Wolf's Soyuz space suit inside Mir as he prepares to become a Mir 24 crew member. His own suit didn't fit initially and had to be adjusted.

8) Dunbar and Edwards watch as Mir moves away from the *Endeavour* following the undocking of the two spacecraft.

9) Edwards transfers fresh water from the Space Shuttle *Endeavour* to a Contingency Water Collection bag destined for Russia's Mir Space Station.

10) Reilly uses a laptop computer in the Spacehab double module to monitor the progress of the Mechanics of Granular Materials experiment.

11) Sharipov wears a hat from his native Kirghizia aboard *Endeavour*.

12) Mir 24 Commander Solovyev shakes hands with STS-89 Commander Wilcutt as the two prepare to close the hatches and undock.



S89-E-5285



S89-E-5100



S89-E-5270



S89-E-5259



S89-E-5237



S89-E-5216



S89-E-5352



S89-E-5444



S89-E-5196

Preventing Pollution

'P2 Team' makes big strides in effort to reduce industrial pollution caused by JSC processes

Pollution prevention is paying off at JSC. Replacing toxic or hazardous materials with more environmentally friendly materials has helped to achieve an almost 75 percent reduction in the amount of hazardous waste generated here between 1994 and 1997.

In pounds, that means the center has dropped from about 4.4 million pounds in 1994 to 872,000 pounds of hazardous waste in calendar year 1997. Other factors, such as better segregation of wastes, more care in ordering and using only the amount of materials needed to do the job and changing processes to generate less waste all contribute to pollution prevention.

"But, as good as our success has been, we still have a lot more we can do," said Jo Kines, chair of JSC's Pollution Prevention Team.

All federal agencies have been directed by the President in an executive order to develop pollution prevention programs and to reduce releases to the environment and the usage of certain hazardous materials. The President's intentions are to show the public that federal agencies can be the example to industry and the rest of the country by significantly reducing the harmful pollutants that are released into the environment.

In addition to all hazardous waste, one of the specifically targeted chemicals, and the only one currently used in large quantities at JSC, is CFC-113 (Chlorofluorocarbon-113 or Freon 113). CFC-113 is an ozone depleting compound and JSC used 22,000 pounds of it in 1996. That's up from the baseline year of 1994, when 16,000 pounds were used. NASA's goal is to reduce CFC-113 usage by 50 percent by the year 2000, an aggressive goal.

JSC has a Pollution Prevention Team, nicknamed the "P2 Team," made up of a cross organizational group of individuals, that is developing a strategic implementation plan on how further to implement pollution prevention at JSC's facilities.

Team Members include Jo Kines, chair, and Sandy Parker, Environmental Services Office; Doug Conover, Plant Engineering Division Mechanical Branch; Cinda Chullen, Engineering Directorate; Mike Pedley, Materials and Failure Analysis Branch; Sandra Tetley, Supply and Materials Branch; and Jim Pawlowski, Space Science Branch.

The strategic implementation plan will include identifying ways to include contractors in our program, disseminating information on pollution prevention, identifying training requirements and how to get funding for prevention projects. To find out where current barriers to prevention exist, the P2 Team has joined up with Rothe's Bldg. 9 clean room personnel to look for ways to reduce the usage of CFC-113 and to implement a specific pollution prevention project.

One area where tremendous success already has been

achieved is the photographic processing laboratory in Bldg. 8. A Photo Waste Pollution Prevention Team was formed to look at ways to reduce the amount of photochemical processing waste that comes from developing photos and developing flight film. Team members included: Sandy Parker, chair, JSC Environmental Services Office; Gary Cook and Ric Slater, JSC Imagery and Publications Office; Tom Scarcella and Bob Bode, DynCorp; Doug Grieco, Johnson Controls World Services; and Gary Wessels, JSC Plant Engineering Division.

The team met for a year from August 1993 until August 1994 and the photographic lab is working to implement the recommendations identified by the team. Some of the waste was eliminated entirely and some was rendered less hazardous.

All those activities have reduced hazardous waste from Bldg. 8 from almost 7 million pounds in 1992, with a cost for disposal at over \$250,000, to about 700,000 pounds in 1997, with a disposal cost of about \$50,000.

The reductions came by eliminating a hexavalent chromium cleaning solution; reduction in the use of formaldehyde; replacing a ferricyanide bleach process with a less toxic, reusable bleach; and by monitoring and adjusting the chemistry of certain processes to maximize the recovery of silver and reuse of solutions.

JSC also is participating in a couple of agencywide teams that are looking for replacements for CFC-113 in the cleaning and verification process. CFC-113 is a standard that has been used for many years in aerospace systems because it has been proven safe and reliable, and it leaves no residue and is compatible with oxygen systems such as those used on the space shuttle. The challenge for the agencywide teams is to find a chemical that will do the same quality job, be safe for humans to work with and will not contribute to the depletion of Earth's ozone layer.

Pollution prevention can be as simple as fixing a leak to prevent the generation of a spill, cleanup of waste or changing a procedure to replace a non-essential, hazardous chemical with a less hazardous alternative. Often, pollution prevention activities result in increased operating efficiency, fewer product losses, reduced cost for disposal, reduced reporting and regulation and, best of all, a healthier workplace and environment. Generally speaking, most pollution prevention activities are just good business sense and must be economically and technically feasible, Kines said.

Anyone interested in participating on the JSC Pollution Prevention Team or in learning more about pollution prevention may call Jo Kines at x33218 or E-mail her. If you have a pollution prevention idea or want to tell someone about your success story, contact anyone on the team. □



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1) Elizabeth Reichardt, a Rothe employee, flushes parts with CFC-113 in the Bldg. 9 clean room. 2) Ronald Price, a Rothe employee, cleans an underground water filter in the pre-clean room. 3) Members of the JSC Pollution Prevention team and Bldg. 9 workers who participated in an assessment of the clean room, are, back row, from left: Dennis Bell, Rothe; Sandra Tetley, Supply and Materials Branch; Ruby Long and Wanda Steiger, Rothe; Carolyn Krumrey, Manufacturing, Materials and Process Technology Division; Ronald Price, Rothe; and Doug Conover, Mechanical Operations Branch. Front row: Cinda Chullen, Engineering Directorate; Anne Ostergaard, IT Corp.; Sandra Parker and Jo Kines, Environmental Services Office. 4) Wanda Steiger, a Rothe employee, performs initial cleaning of an underground water filter. Pre-cleaning and cleanliness verification are done with CFC-113. 5) Elizabeth Reichardt, a Rothe employee, uses a CFC-113 vapor degreaser. 6) Roxanne Harter, a Rothe inspector, reads a particle count for cleanliness verification as Dennis Bell, a Rothe lab technician, prepares another sample.



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26 Years Ago at MSC

'Flight, this is EGIL!'

Controllers run first of Skylab sim sessions

Reprinted from the Feb. 4, 1972, edition of Space News Roundup

The faces are familiar, the consoles look much the same, but the chatter on the loops sounds new and strange. And rightly so, because a new Mission Control Center is in the offing.

EGIL-pronounced "eagle"-is just one of the many new call signs for Skylab in the MCC. The letters stand for the console position, "Saturn Workshop, Electrical General Instrumentation Life Support Systems."

This past week a team of flight controllers, flight planners, and "backroom" experts assembled in the MCC's third floor rooms for a series of preliminary planning simulations.

These first simulations are aimed at exercising the basic plans and procedures necessary before more detailed sims, involving other elements of the Skylab team, can begin later.

Flight planners and controllers are taking an initial look at procedures involved in integrating the four areas of experimental planning in Skylab, particularly the ATM (Apollo Telescope Mount) and EREP (Earth Resources Experiments Package) areas, and to evaluate the effects of solar activity and Earth weather on Skylab's operation.

Participating in these preliminary sims are members of the Flight Control Division, Space Flight Meteorology Office, Crew Procedures Division, and Mission Planning and Analysis Division.

No real-time computer support is involved in the sims, and no data from the spacecraft or spacecraft problems are injected into the sims.

The main variables being considered at this time are weather in the target areas, resulting in flight plan updating to work around predicted

cloud cover along the groundtrack, and unexpected solar activity necessitating changes in the ATM plan.

The sims cover the period between command module rendezvous with the Skylab and undocking for the return to Earth.

A list of Skylab instrument ON/OFF times for each instrument as it passes over the target (based on the fields of view) during each revolution is provided to the teams in Mission Control.

Graphical display of the ground tracks superimposed on the targets is projected on the TV displays in the front of the Mission Operations Control Room and on the consoles.

To provide weather realism for these initial sims, the Space Flight Meteorology Office began in December to record daily real-time data from areas around the world which Skylab will cover to make weather forecasts for that day and projected five-day forecasts.

During the current simulations, meteorologists in the MCC provide the cloud cover forecast for the countries scanned by Skylab and give flight controller teams the probabilities of cloud cover in the areas under the groundtrack of Skylab.

A typical day of planning begins with the awakening of the crew at 6:00 a.m. Houston time and at 6:30 a.m., giving the "go-no go" for the day's EREP pass and experiment plan.

At 10:00 a.m., the initial selection of EREP passes for the next five days is made. Information on special experiment requirements is also relayed at that time.

At 1:00 p.m., the flight controller teams look at a summary flight plan and alternates available to the MOCR operations. The summary flight plan is approved around 5:00 p.m. After plan approval, experiment detail planning begins, and



NASA Photo

Above: The Apollo Telescope Mount Staff Support Room in the Mission Control Center was one of the focal points of activity during the initial simulations for the Skylab missions. Flight controllers, flight planners and "backroom" experts assembled in third-floor rooms for a series of preliminary planning simulations aimed at exercising basic plans and procedures. Below: Astronauts Bob Crippen, left, and Bill Thornton familiarize themselves with equipment that would fly aboard the Skylab space station.

the final plan is passed to the Skylab crew at 6:00 p.m.

By 9:00 p.m., detailed planning for the ATM experiments, and medical experiments is under way. The EREP update is sent to the crew at this time.

Milt Windler of the Flight Control Division has directed planning and coordination of these initial simulation exercises.

This series of sims, in addition to exercising the basic plans and procedures, provides an excellent opportunity for the flight control team to become familiar with the new terminology and call signs used between the various console positions in the MCC.

Simulations involving the other elements connected with the Skylab mission will begin sometime late this fall.



S72-41858

Gilruth Center News

Hours: The Gilruth Center is open from 6:30 a.m.-10 p.m. Monday-Thursday, 6:30 a.m.-9 p.m. Friday, and 9 a.m.-2 p.m. Saturday.

Sign up policy: All classes and athletic activities are on a first come, first served basis. Sign up in person at the Gilruth Center and show a yellow Gilruth or weight room badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

Gilruth badges: Required for use of the Gilruth Center. Employees, spouses, eligible dependents, NASA retirees and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 9 a.m.-2 p.m. Saturdays. Cost is \$10. Dependents must be between 16 and 23 years old.

Nutrition intervention program: Would you like to learn more about the role diet and nutrition play in your health? This six-week program includes lectures, a private consultation with the dietitian and blood analysis to chart your progress. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.

Defensive driving: One-day course is offered once a month at the Gilruth Center. Pre-registration required. Cost is \$25. Call for next available class.

Stamp club: Meets every second and fourth Monday at 7 p.m. in Rm. 216.

Weight safety: Required course for employees wishing to use the Gilruth weight room. The next classes are scheduled for at 8 p.m. Feb. 26 and Mar. 12 (must be on time to receive credit for class). Pre-registration is required. Cost is \$5. Annual weight room use fee is \$90. Additional family members are \$50.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Aikido: Introductory martial arts class meets from 5:15-6:15 p.m. Tuesday and Wednesday. New classes begin the first of each month. Instruction is by a fourth-degree black belt. Learn to defend yourself and get a great aerobic workout. Cost is \$35 per month.

Step/bench aerobics: Low impact cardiovascular workout. Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks. Call Kristen Taragzewski, instructor, at x36891 for more information.

Ballroom dancing: Classes meet from 7-8:15 p.m. Thursdays for beginner advanced classes and from 8:15-9:30 p.m. for beginner-intermediate and intermediate students. Cost is \$60 per couple.

Country and western dancing: Beginner class meets 7-8:30 p.m. Monday. Advanced class (must know basic steps to all dances) meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

Fitness program: Health Related Fitness Program includes a medical screening examination and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

Gilruth Home Page: Check out all activities at the Gilruth online at: <http://www4.jsc.nasa.gov/ah/exceaa/Gilruth/Gilruth.htm>

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday and in the Bldg. 3 Exchange Store from 7 a.m.-4 p.m. Monday - Friday. For more information call x35350 or x30990.

Moody Gardens: Tickets are \$9.50 for two of four events

Space Center Houston: Adults, \$10.25; children (4-11), \$7. JSC civil service employees free.

Movie discounts: General Cinema, \$5.50; AMC Theater, \$4.50; Sony Loew's Theater, \$5.

Shirts: International Space Station logo pique golf shirts, \$26 and \$28

Stamps: Book of 20, \$6.40

1998 Franklin Planners: Replacement refill orders being taken now.

Sweetwater Pecans: Orders are being taken now; cost is \$5.75 per pound.

Metro passes: Tokens and value cards available.

Book available: Suddenly Tomorrow Came: A History of Johnson Space Center.

Balloons: Balloon bouquets for all occasions, prices vary.

Roundup Deadlines

The Space News Roundup is published every other Friday. Story ideas should be submitted as far in advance as possible, but no later than two weeks prior to the date of publication.

The deadline for Dates & Data calendar items is three weeks prior to the date of publication.

Stories and ideas should be submitted to Kelly Humphries in Bldg. 2, Rm. 180, or via e-mail to kelly.o.humphries1@jsc.nasa.gov

Project IQ helps employees earn undergraduate degrees

JSC again will sponsor the Project IQ Program, which provides undergraduate college opportunities to selected employees during duty hours.

Both JSC and employees benefit through opportunities for employees to improve skills, become more productive in their present jobs, and increase their qualifications for future jobs. The program helps employees do this by allowing them to:

- Attend one to three college courses per semester;
- Go to school during duty hours for up to 8 hours per week; and
- Get JSC to pay for tuition, required fees and books

Mileage and other costs associated with travel to the college or university are the responsibility of the participant. Courses that do not relate to the employee's current or reasonable future job or JSC's mission will not be considered for the program.

Applicants must meet the follow-

ing qualifications to be considered for the program:

- Be a permanent employee with at least one year of continuous civilian service;
- Occupy a support staff or technician position in grades GS-1 through GS-11; and
- Have completed a minimum of 6 semester hours of college level work, preferably within the last two years; employees who already possess a bachelor's degree are not eligible.

Other important factors include work performance, statement of academic purpose, proposed course work, academic history, nomination by supervisor, and employee and office's workload.

To request that an application be sent to you or for more information about the program, call Kazuko Hall-Farley at x33075. Completed applications are due to the AH3/Human Resources Development Branch no later than Friday, April 24.

People on the Move

Human Resources reports the following personnel changes as of Jan. 31, 1998:

Key Management Assignments

John McManamen was selected as chief, Structures and Dynamics Branch, Structures and Mechanics Division, Engineering Directorate.

Bob Armstrong was selected as chief, Electrical Systems Branch, Systems Division, Mission Operations Directorate.

Additions to the Workforce

Vicki Pendergrass joins the Information Systems Directorate as deputy director.

Promotions

Nilda Reyes was selected as a secretary in the Office of the Chief Financial Officer.

Lisa Gurgos was selected as a program support specialist in the International Space Station Program Office.

Resassignments Between Directorates

Hugh Ronalds moves from the International Space Station Program Office to the Engineering Directorate.

Aubra Boyd moves from the Business Management Directorate to the Information Systems Directorate.

Carolyn Perkins moves from the Engineering Directorate to the Office of the Chief Financial Officer.

Reassignments to Other Centers

Jason Eickenhorst of the Business Management Directorate moves to Goddard Space Flight Center.

Scott Thompson of the Business Management Directorate moves to NASA Headquarters.

Jim Simpson of the Engineering Directorate moves to Goddard Space Flight Center.



JSC Photo by Sebe Candlor 98-01424

Members of the JSC Clinic staff, all on-site employees of Kelsey-Seybold, hold the banner that signifies their ISO-9002 certification at the Jan. 28 presentation ceremonies at the Gilruth Center. The Kelsey-Seybold clinic is the first medical clinic ever certified as ISO 9002 compliant in the United States.

Kelsey-Seybold Clinic now ISO 9002 certified

In December 1997 Kelsey-Seybold Clinic, the JSC Occupational Medicine and Environmental Health Contractor, became ISO 9002 certified, realizing a goal to become ISO certified in less than 12 months.

The registrar, chosen to audit contract operations, was one of only two registrars in the United States authorized to register medical operations.

At the end of a two-day, comprehensive audit which revealed only one minor nonconformance, the auditors announced their intention to recommend that Kelsey-Seybold receive an unconditional issuance of the ISO 9002 certificate. This was the first certification ever of such a complex array of services under one scope.

All Kelsey-Seybold services at JSC including the Medical Clinic, Dental Clinic, Employee Assistance Program, Health Fitness Program, Manned Test Support,

Industrial Hygiene, Hazard Communication, Environmental Surveillance, Radiological Health, Cardiopulmonary Laboratory, Environmental Health Laboratory, and the Clinical Laboratory are now certified.

A presentation ceremony was held at the Gilruth Ballroom on Jan. 28. when Kelsey-Seybold received its ISO 9002 registration plaque. The ISO 9002 plaque was awarded to Dr. James Baker, Kelsey-Seybold project manager, by Bryce Carson, vice-president of Kemper Registrar Services Inc.

According to Carson, this certification represented many firsts for ISO 9002 registration in the United States: the first full-service clinic, the first Employee Assistance Program, the first Radiological Health Department, the first Industrial Hygiene Department, the first Manned Test Support Group, and the first Health Fitness Department.



98-01423

JSC Director George Abbey holds up the plaque presented to Kelsey Seybold for achieving ISO-9002 certification with, from left, Sheila Goldberg, Becky Siemens, Dr. James Hoyle, and Dr. James Baker. The presentation was made by Bryce Carson of Kemper Registrar Services Inc.

STS-89 crew to discuss last Mir crew swap

The STS-89 crew will talk about its nine-day mission at 7 p.m. Thursday, Feb. 19, in Space Center Houston's IMAX Theater.

Commander Terry Wilcutt, Pilot Joe Edwards, Mission Specialists Michael Anderson, James Reilly, Bonnie Dunbar and Salizahn Sharipov and Dave Wolf will share their photos and experiences from the nine-day shuttle/Mir docking mission.

Astronaut David Wolf will recall his four-month stay aboard the Russian Mir Space Station.

Immediately prior to the briefing, Lead Flight Director Phil Engelauf and JSC Director George Abbey will recognize key individuals and teams for their outstanding contributions to the flight. Abbey also will recognize the crew's accomplishments with the presentation of their NASA Space Flight Medals. The program will conclude with a showing of the IMAX movie "Mission to Mir."

Limited seating will be available for the program, which is open to JSC employees, family members, friends, contractors both on and off site, and guests. Doors open at 6:30 p.m. and seating is first-come, first-served. Admission and parking at Space Center Houston are free.

For more information call Helen Harris at x38413.

Embry-Riddle offers JSC satellite campus

Embry-Riddle Aeronautical University will accept registration March 2-13 for courses at its Ellington Field satellite campus for the semester running from March 16-May 17.

The following courses will be held in JSC Aircraft Operations Bldg. 273 at Ellington:

Basic Algebra and Trigonometry, 5:30-8 p.m. Tuesday-Thursday;

Airline Management, 5:30-10 p.m. Monday; and

General Aviation Marketing, 5:30-10 p.m. Wednesday;

The U. S. Coast Guard sponsors a master of science in aeronautical science at its Ellington Field facilities, and invites JSC participation in:

Research Methods and Statistics, 5:30-10 p.m. Wednesday;

Production and Procurement Management in the Aviation and Aerospace Industry, 5:30-10 p.m. Thursday; and

Aviation/Aerospace Communications Control Systems, 8 a.m.-5 p.m. Saturday.

Civil servants may have their courses paid up-front by JSC by submitting approved Applications for Training, JSC Form 75, to ERAU. For more information, call Kazuko Hall-Farley at x33075.

Dates & Data

Feb. 13

NSS meets: The Clear Lake chapter of the National Space Society will meet at 6:30 p.m. Feb. 13 at the Radisson Hotel, Hobby Airport. Ken Jenks, a human physiology research scientist and shuttle flight controller, will speak about the basic physiological effects of the space environment on the human body. For details, call Murray Clark at 367-2227.

Astronomers meet: The JSC Astronomical Society will meet at 7:30 p.m. Feb. 13 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. For more information, call Chuck Shaw at x35416.

Feb. 16

AIAA meets: The American Institute of Aeronautics and Astronautics will host an evening at the Lone Star Flight Museum at 6:30 p.m. Feb. 16. Dr. Jan Roskam will speak on "Future Trends in Aircraft Design." For reservations call Miros Garza at

x30934 or Janet Stewart at 333-6724.

Feb. 18

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Feb. 18 at the House of Prayer Lutheran Church. For more information, call George Salizar at x30162.

Communicators meet: The Clear Lake Communicators will meet at 11:30 a.m. Feb. 18. For information and location, contact Henry Duke at 281-280-4403 or Melissa Sommers at 281-332-0698.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Feb. 18 at United Space Alliance, 600 Gemini. For details, call Chuck Kubricht at 282-3908 or Brian Collins at x35190.

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Feb. 18 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at x35037.

Scuba club meets: The Lunarflins will meet at 7:30 p.m. Feb. 18 at the Redfish Restaurant under the Kemah/Seabrook bridge, Seabrook side. For more information, call Mike Manering at x32618.

Feb. 19

Child Care directors meet: The Space Family Education board of directors will meet at 11:30 a.m. Feb. 19 in Bldg. 45, Rm. 712D. For more information on this open meeting, call Gretchen Thomas at x37664.

AIAA seminar: The American Institute of Aeronautics and Astronautics will host a technology transfer seminar at 6:45 p.m. Feb. 19 at 2450 NASA Road 1, Rm. 32C. Jim Cameron, senior consultant for marketing for NASA-Mid Continent Technology Transfer Center, will speak about technology commercialization opportunities for today's companies. Reservations are due by noon Feb. 18 to Charles Halliman at (713)991-1654.

Radio classes: The JSC Amateur Radio Club is offering beginning "ham" radio classes from 7-9 p.m. Thursday evenings starting Feb. 19 at the Webster fire department. For more information, contact Larry Dietrich at x39198.

Feb. 25

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. Feb. 25 at the House of Prayer Lutheran Church. For details, call George Salizar at x30162.

Communicators meet: The Clear Lake Communicators will meet at 11:30 a.m. Feb. 25. For information and location, contact Henry Duke at 280-4403 or Melissa Sommers at 332-0698.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Feb. 25 at United Space Alliance, 600 Gemini. For details, call Chuck Kubricht at 282-3908 or Brian Collins at x35190.

Astronomers meet: The JSC

Astronomy Seminar will meet at noon Feb. 25 in Bldg. 31, Rm. 129. An astronomy/astrophysics video tape will be shown. For more information, call Al Jackson at x35037.

Radio Club meets: The JSC Amateur Radio Club will meet at 6:30 p.m. Feb. 26 at the Piccadilly, 2465 Bay Area Blvd. For more information, call Larry Dietrich at x39198.

March 4

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. March 4 at the House of Prayer Lutheran Church. For more information, call George Salizar at x30162.

Grand rounds: Laurence Young, director of the National Space Biomedical Research Institute will present the Space Medicine Grand Rounds at 8:30 a.m. March 3 at the Center for Advanced Space Studies, 3600 Bay Area Blvd. The topic will be "Space and the Vestibular System." For details, call Kay Nute at 244-2019.

NASA Briefs

Student satellite eyes atmospheric physics

The first in a new class of inexpensive, student-built space missions funded by NASA launched Feb. 5 from Vandenberg Air Force Base, Calif. The mission, the Student Nitric Oxide Explorer, is investigating the effects of energy from both the Sun and the magnetosphere on nitric oxide densities in the Earth's upper atmosphere. The Student Nitric Oxide Explorer spacecraft was designed, built, and is being operated by the University of Colorado's Laboratory for Atmospheric and Space Physics in Boulder. SNOE is the first of three student satellite projects selected to be built under the Student Explorer Demonstration Initiative program. The spacecraft was launched into orbit by a Pegasus XL rocket built by Orbital Sciences Corp., Dulles, Va. The 254-pound spacecraft carries three instruments: an ultraviolet spectrometer, a five-channel solar soft X-ray photometer; and a two-channel auroral photometer.

Hughes to build new weather satellites

NASA and the National Oceanic and Atmospheric Administration have awarded a \$423 million contract to Hughes Space and Communications, El Segundo, Calif., for the manufacture, launch and delivery on-orbit of up to four weather-monitoring Geostationary Operational Environmental Satellites. The procurement of the GOES-N through -Q spacecraft marks the extension of this multi-satellite program designed to provide continuous monitoring of the Earth's weather systems and the related space environment. The new spacecraft will be used to continue and enhance the functions of the current GOES I-M series of spacecraft.

Research get grip on runaway runways

NASA is leading an international effort to help prevent accidents by aircraft losing traction on icy runways. Ice or snow on a runway was a factor in approximately 30 airplane accidents between 1983 and 1995, according to reports from the National Transportation Safety Board. A research team is in Canada proving technology concepts for better understanding of runway friction, improved tire designs, better chemical treatments for snow and ice, and new types of runway surfaces that minimize bad weather effects. The team has developed an international runway friction indexing method.

Don't be fooled by electronic mail hoaxes

"PENPAL," "Join the Crew," "Ghost," "GOOD TIMES"—these are all colorful names for electronic mail notes that have been circulating around the United States via the Internet. These and many other similar notes all purport to be warnings to computer users. If you open the note, the warnings invariably read, irreparable damage will occur to the information stored in your workstation.

"These notes have something else in common," said Sandra Price who oversees JSC's computer Virus Response Team, "every one of them is a hoax. People release these false messages into the Internet accompanied by details of very spectacular damage that will occur if you open the

note. The warnings are accompanied by a request to send the note on to everybody you know."

Well-meaning people actually do forward these notes, according to Frank Martin, JSC's deputy center computer security manager, some of them to massive distribution lists. "Unfortunately, JSC hasn't been immune to these hoaxes. We've seen 14 of them circulating through JSC's mail system since 1995, not counting those that seem to return about every three months."

Although the viruses don't exist, users sending notes to massive distribution lists have threatened to bring JSC's electronic mail system to its knees. Recently, one user attempted

to forward a hoax message to every name in the JSC Global Address List. Fortunately, the note was stopped quickly before damage could be done.

Several recent hoaxes have involved chain letters of another kind. The American Cancer Society's name was used in a hoax involving a non-existent, terminally ill young person whose supposed last wish was to circulate an electronic chain letter. Hoaxes attempt to manipulate the fears or sentiments of those who receive them. When receivers forward the notes, they are the ones actually doing the damage because they clog the mail system.

JSC's computer users now will find a new link off the JSC Internal Home

Page that will give them more information about hoaxes. The new link becomes active today. Users will find a brief description of all the hoaxes the JSC Computer Security Manager's Office knows about, along with links to pursue. Sandra Price, curator, welcomes readers' questions and comments at x37682.

Lee Snapp, Center Computer Security Manager, encouraged the entire JSC community to help protect the center's electronic mail system by making use of this new page.

"The supply of new hoaxes seems to be unlimited," he added. "If you run into a new one not on our list, don't distribute the note; do call your organization's Computer Security Official."



LEAPIN' LARIATS—Astronaut William Gregory prepares to throw the lasso around a "calf" as Katherine McNeal looks on during JSC Rodeo Liftoff activities. He successfully caught the slow-moving little calf by one horn. McNeal is a member of the Houston Livestock Show and Rodeo speaker's bureau and practices calf roping every day to be able to put on the presentations to school and civic groups in promoting the rodeo.

JSC Photo by Steve Candler

JSC Quality System audit approaching

If JSC passes an external audit of the JSC Quality System, scheduled for Feb. 24 and 25, it will become the first NASA center and the largest federal government installation to achieve ISO 9001 certification.

Auditors from National Quality Assurance will concentrate on the subject of Corrective and Preventive Action and whether JSC has fully implemented the corrective action requirements contained in the ISO 9001 standard.

ISO 9000 Office Director Lee Norbraten said that a disciplined approach to corrective action is critical to the overall operation of JSC. "Corrective action, if managed well, is the single element of the ISO 9001 standard that offers a return on the efforts that we have expended to achieve registration," Norbraten said.

"How does corrective action under ISO 9000 differ from how we have always done corrective action at JSC?" If we are talking about responding to a critical technical problem, the answer is probably very little," he explained. "This center wrote the book on the effective disposition of hardware and software problems, especially those that involve flight safety or mission performance. The differences are more evident when we look at how JSC responds to other types of issues, in particular, those that involve management or resource factors. The ISO 9000 based system generally requires that we submit those kind of issues to the same level of scrutiny as the technical issues.

"Under ISO 9000, the focus is generally more on broken 'process' than broken 'product'. Well-managed corrective action always puts more emphasis on preventing problems before they occur than fixing a problem after it happens. Thus, it places on process owners at all levels the responsibility to monitor their process by maintaining objective data, and then applying their best technical and managerial judgment as to when action is needed," Norbraten said.

A common misconception about corrective action is that it must be employed for every reported problem, he added. But only a small percentage of problems should trigger corrective action as the ISO 9000 standard defines it: for recurring technical problems, high risk or high cost issues, or issues that affect multiple organizations.

Most JSC managers and supervisors participated in an extensive Corrective Action Tutorial during January. It is now their duty to ensure that people within their organizations have a correct understanding of corrective action and how it is implemented in their work area. A pocket guide on corrective action has been distributed to all JSC and on-site contractor workers.

"ISO 9000 registration is unimportant relative to the need to do corrective action well," he said. "We need everyone's help to make sure our Quality System adds value to the ongoing work at JSC."

Budget includes X-38 start in 2000

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resources it needs to pioneer the future.

"Last year was exciting. I'm willing to bet this year will be even better," Goldin said, noting that NASA's 40th anniversary is fast approaching. "Rest assured ... as we have for the past forty years ... NASA will perform. We will meet our commitments ... and we'll inspire millions—young and old—along the way."

Clinton also saluted Sen. John Glenn, the first American to orbit the Earth, who will return to space on STS-95 this fall.

"This October, a true American hero, a veteran pilot of 149 combat missions and one five-hour space flight that changed the world, will return to the heavens. God speed, John Glenn," he said. "John, you will carry with you America's hopes. And on your uniform once again, you will carry America's flag marking the unbroken connection between the deeds of America's past and the daring of America's future."

President Clinton's proposed budget for

fiscal 1999 includes full funding for the International Space Station and a new start for X-38 assured crew return vehicle being developed at JSC.

"Over the next two years, space shuttle operations will continue the transition to a single prime contractor," Goldin said. "And this budget will allow us to complete the major shuttle upgrades already under way as well as maintaining the funding for future upgrades. In sum, I am proud that the space shuttle team is delivering on its promise: We meet our flight rate. We have less and less in-flight hardware problems. We're flying for less money. And we are safer today than ever before.

"As for new projects, we have identified as a start-up in fiscal year 2000 ... the space station's crew return vehicle," Goldin said. "During the next year, we will closely watch the X-38 development and monitor cost projections. That way we can verify the appropriate funding levels when we begin this new start-up."

Space station pact charts course for human destiny

(Continued from Page 1)

Europe, through the European Space Agency, will provide a pressurized laboratory and flight elements to re-boost and to supply the space station. Japan will provide an experimental module, including an exposed facility, experimental logistics modules and flight elements to re-supply the space station. Russia, through the Russian Space Agency, will provide infrastructure elements, including service, research and life support modules, payload equipment and flight elements to supply and re-boost the space station. And the United States, through our own NASA, will also provide infrastructure elements, including a habitation module, a laboratory module, a payload equipment and flight elements to support the station, including the space shuttle.

"When complete, I think we all know that the International Space Station will provide a unique international facility. We can anticipate major advances in microgravity research, in life sciences, biotechnology, just to name a few examples of how this facility will be used and prove to be a valuable resource in the 21st century," Gibbons said. "To the people in this room, and indeed to people around the world, the station serves as a very powerful symbol of what great nations can do through peaceful cooperation. It will stand as a visible and concrete symbol of the tremendous possibilities open to us as we cross into the next millennium."

Led by the U.S., the International Space Station will be the largest, most complex international cooperative science and engineering pro-

gram ever attempted. Taking advantage of the technical expertise from participating countries, the station will bring together scientists, engineers and researchers from around the globe to assemble a premier research facility in orbit.

"The International Space Station's unlimited potential is matched only by what I hope is by our limitless imagination, because in addition to the possibilities I just mentioned, the international space station will also most importantly provide the promise of further exploration," Goldin said. "If it is our destiny to explore, which I believe it is, then the International Space Station is the next step. But today is the first step. Every so often people come together to explore new frontiers, to inspire our children and to benefit all of humankind. It is a rare occasion,

however, when it is not only the people coming together, but countries; this is such a time," Goldin said.

"Today we chart a course for the future, and, in doing so, we will change the course of human history," Goldin said. "Yes, the eyes of the people are upon us, but so are their hopes and dreams. And for the citizens of the city in space, indeed for the citizens of the world, this is just the beginning."

With the launch of the first space station element later this year, the partnership will assemble more than 100 components in low-Earth orbit over the next five years, using some 45 assembly flights. As currently envisioned, the station will support a crew of up to seven and include five complete pressurized laboratories and attached external sites for research.



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